Duplicity in the Production of Nuclear Warheads

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ABSTRACT

The Department of Energy is producing more nuclear warheads than it is declaring in its official Nuclear Stockpile Memoranda. This paper gives an overview of the situation. "The Real Size of the US Nuclear Arsenal" is a manuscript in process that elaborates on the evidence.

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About the Author

Larry Manuel is a systems engineer presently working for the Nuclear Stockpile Investigation. He has done feasibility studies on various forms of alternative energy, mineral resource, and transportation technology. He has worked on prototype development of precision wafer production equipment for the semiconductor industry. He studied chemistry and physics at the University of Chicago and has taught electronics in the graduate level Scientific Instrumentation Program at the University of Brasilia.

According to Greek legend, Icarus, to escape his enemies, donned wax wings and flew from the island of Crete, but flew too close to the sun. His wings melted and he fell into the sea and drowned. Today, scientists designing secret warheads that may easily be concealed because they are externally identical to high explosive warheads, have named this concept, "Waxwing." The United States is to be able to rise above its opponents by secretly matching nuclear shells against their conventional shells. If we rise too close to the thermonuclear inferno, however, the advantage will evaporate and we will all die.

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In recent years various compilations of the nuclear warheads in the US stockpile have been made, using both press releases and leaks of information.[1] These probably closely match the Department of Energy's (DOE) classified official lists, the Nuclear Weapons Stockpile Memoranda. They are not, however, consistent with technical information about testing and production. Four contradictions I found to be outstanding:

1) The craters created at the Pacific Proving Grounds by atmospheric testing in the 1950's and early 1960's were over ten times larger than crater sizes predicted from the announced yields.[2]

2) The available nuclear material is enough to make a stockpile over one hundred times larger than the published size.[3]

3) US military aircraft can carry five times the published amount of bombs.[4]

4) New laser-controlled lathes, that are a thousand times more accurate than previous ones, make possible much smaller warheads, yet the minimum size officially produced has not diminished in the past twenty years.[5]

In claiming the accuracy of previous estimates, their authors have made the assumption that the Stockpile Memoranda list truthful figures. Not being satisfied with this assumption, I checked those figures against other data. I first made models of nuclear warheads from physical principles.[6] These I cross checked against publicized information about the warheads, using:

1) shapes, dimensions, and weights,[4]

2) total quantities of special materials,[3]

3) manufacturing techniques and materials,[7]

4) accuracies of testing and manufacturing equipment.

At each step, I modified the designs to be consistent with the new data. To do this I had to find and correct falsified portions in many of the documents, by methods that are too lengthy to describe in this paper. (For an obvious example of falsification, look at pictures of Short Range Attack Missiles (SRAMs) being loaded into B-52s, in which parts have been added to make the B-52 bomb bay appear smaller.)[8,9,10]

I then checked:

1) yields of the model warheads against data on crater,[2] fireball,[11] and mushroom cloud sizes[12] from weapons tests.

2) estimating numbers of warheads against the total payloads of nuclear delivery vehicles.[4]

3) the published use of vehicles and facilities for internal consistency.[13]

4) military policy statements for consistency with the deployment of the estimated amounts and types of weapons.[14,15]

The Enormous Stockpile

Based on the above procedure, I concluded that for 30 years the DOE and its predecessors have been falsifying the Stockpile Memoranda. The US is producing a greater amount of nuclear warheads than is listed, by understating the yields of warheads by a factor of ten, and by understating the numbers of specific warheads produced by up to a factor of ten. The extra warheads are hidden at sites, both in military and civilian areas, which for security rely on secrecy rather than on the official set of regulations.[16,17] Now it is designing a new class of warheads, nuclear "micromunitions", which may be disguised as high explosive warheads.

The understatement in the total yield of the stockpile is by a factor of about seventy-five. The real figure is almost 600,000 megatons (MT), compared to the stated figure of 8000 MT.[1] The understatement in total numbers is by a factor of about seven, that is, about 175,000 real warheads compared to a stated number of 26,000.[1] The new class of warheads, which are of very low cost and yield, may increase the total number tenfold, but will not increase the total power.[15] Their main danger is that they are designed to minimize the distinction between conventional and nuclear war, and will thus increase the probability of a localized war escalating to a nuclear catastrophe.

For lack of space, most of my sources and most of my conclusions must herein remain unreferenced. Further evidence and explanation is being circulating for comment in a manuscript, The Real Size of the US Nuclear Arsenal. Under the auspices of the Nuclear Stockpile Investigation, this is to be expanded into a book and published next year.[18]

Beginnings of Nuclear Policy

A military ideology of massive superiority has dominated the United States armed forces since World War II. For example, General Thomas Power, former Commander in Chief of the Strategic Air Command, has declared,

> "In building our nuclear force, nobody can tell you exactly when enough has been done. My philosophy has been to have overwhelming strength so it makes no difference if you are off a couple of decimal points."[19]

The ideology of superiority states that a balance of power in the world is not good enough, and that if the arsenal is to have a deterrent effect, the US nuclear force must be the strongest power in the world even after an enemy has launched a first strike against the United States.[20]

After World War II, the United States declared that it was the "policeman" of the world and had the right to settle any dispute. This "right" was to be imposed through having a nuclear monopoly. In a few years, the US developed the capability of destroying the key industrial and military centers of the Soviet Union, using improved versions of the Nagasaki type atomic bomb.[21]

The Massive Buildup

After the Soviet Union tested its own A-bomb in September 1949, the US decided on a massive expansion of its nuclear warfare capability. The project included:

1) producing the H-bomb

2) increasing the production of fissile material 20 fold

3) using fusion to boost the efficiency of A-bombs

4) using ideas of Theodore Taylor to

better focus the energy of the chemical explosives in the bombs, thus greatly decreasing their weight and increasing their efficiency.[22]

To increase the stockpile as rapidly as possible, the US first deployed a large 400 megaton H-bomb (Mk-17) made with cheap materials. The first test of it (BRAVO, 1 March 1954) gained notoriety by contaminating a large area of the Pacific with lethal fallout, even though the reduced-yield test device produced only 3% of the fallout that the Mk-17 would have.[23]

Taylor's ideas led to the development of a small, two-stage fusion-boosted device, which used ten times less fissile material and weighed 100 times less than the A-bomb designs of 1950. A new set of manufacturing facilities to build the many accurately machined parts, were built between about 1954 and 1958. These plants could produce 200 times as many warheads as were produced in 1950.

At first, the bombs were stored in a mountain near Albuquerque NM.[24] Since the Soviet Union would quickly gain the ability to destroy US storage depots, however, a system was soon devised to secretly disperse most of the warheads. It was also designed to hide the tremendous advances in US nuclear weapons technology.

Thereafter, records kept by the Atomic Energy Commission stated a yield for each warhead that was ten times smaller than in reality, and most orders for warheads were secretly reproduced in ten separate shops in the new complex. One of the ten warheads became the official bomb and was mounted on an airplane or missile or was stored in a special security area. Four of them were stored in unmarked military containers on military bases near the delivery vehicles. The other five were routed through an entirely different set of facilities and were stored in unmarked containers in civilian areas to be used as a postattack reserve. High explosive warheads were built for most missiles to take the place of the hidden nuclear warheads during peacetime.

To keep all this secret, the Atomic Energy Commission (AEC) had special laws passed. The AEC and its successors have maintained that all information about nuclear weapons is "born secret", that is, it is illegal to divulge it to any unauthorized person, even if it was derived from public sources. This sweepingly broad interpretation of the law, however, has never been tested in court.[25]

With this massive increase in destructive power, the US was able to bomb the countryside of entire nations, rather than just being limited to key targets. Thus, it could destroy enemy forces dispersed and dug in according to any creditable scenario. A public policy of "massive retaliation" was adopted during the 1950's, in which the US would bomb the Soviet Union "back to the Stone Age" if they moved past a political "tripwire."

Tactical Nuclear Warfare

The buildup in the 1950's included many tactical "minimunitions," with which to attack moderate size targets, such as, depots, tank columns, and ships. By the early 1960's the Pentagon, however, had lost much of its enthusiasm for tactical nuclear weapons, because the construction of a large nuclear stockpile by the Soviet Union made nuclear war with them impractical. Since even the small minimunitions were a thousand times larger than conventional bombs,[26] the use of any nuclear bomb was bound to have major political repercussions, both internationally and domestically. The concept arose that conventional war and nuclear war were separated by a "firebreak", and that the "nuclear umbrella" could not creditably deter small conventional wars. A "flexible response" policy was adopted, in which US conventional forces would fight such "brushfire" wars. This policy was tested in Viet Nam and failed miserably, however. The strength of the firebreak was demonstrated in 1970, when President Nixon was unable to carry out an ultimatum to use nuclear weapons against Hanoi, mainly because of domestic opposition.[27]

The nuclear design laboratories, in the meantime, switched their focus to designing smaller, less destructive tactical weapons. A long process of lobbying by the laboratories combined with the failure of the Viet Nam War eventually brought a renewed interest by the Pentagon in tactical nuclear weapons.[14] In the new concept, the "collateral damage" from nuclear warfare would be reduced by using massive numbers of small, precisely-aimed nuclear warheads in place of massive "carpet bombing."

Recent Production Increases

In October 1980, President Carter approved the decision to rebuild the weapons production complex,[28] to be able to produce smaller and cheaper warheads using new miniaturization techniques, similarly to what has happened in the electronics industry.[29,30] Three new classes of warheads are being produced: neutron bombs, nuclear "micromunitions", and X-ray laser warheads. Neutron bombs, which are antipersonnel weapons, were secretly deployed in 1976, though security leaks soon brought them to light.[31]

The X-ray laser warhead consists of an array of laser tubes surrounding a small nuclear bomb. When the bomb explodes, the pulse of X-rays it produces are converted into beams, which destroy satellites and ballistic missile warheads. The ABM Treaty now prevents the US from deploying the weapon, though it may abrogate that treaty in the foreseeable future.

The less well-known micromunitions are very low yield, very cheap nuclear bombs with which to attack small targets, such as, bridges, truck convoys, and single tanks. A 90 mm tank shell, with a yield of several tons and an immediate lethal radius of 100 meters, will cost a few thousand dollars. The testing of these warheads probably started in 1983 in an series of unannounced tests revealed to Congress by the head of the Defense Nuclear Agency, Lieut. General Harry A. Griffith.[32] They will probably be deployed in 1986.[30]

The micromunitions effectively close the "firebreak" between nuclear and conventional warfare, because they can be made identical to conventional warheads in handling and appearance, and because they are not much larger in either cost or power. Their greater power, however, will make a near miss lethal, whereas the equivalent conventional warhead would require a direct hit.

As with any weapons, however, the advantage of micromunitions lies in the other side not having them, a situation which is more likely if their existence is kept secret. To hide types of warheads is not possible with the present DOE multiple workshops organization, because too many people have access to the overall designs of the warheads for such a secret to be kept very long. More secrecy will be possible with the rebuilt factories, as they will rely heavily on computer-aided design and computer-aided manufacturing (CAD/CAM) technology.[30] This will allow the manufacturing plants to turn laboratory designs into production hardware and will automate parts handling, so that computers rather than people will keep track of parts. Since the DOE is giving micromunitions almost no publicity, it appears that they are trying to keep them secret for as long as possible, as was tried with the neutron bomb.[31]

Waxwing

According to Greek legend, Icarus, to escape his enemies, donned wax wings and flew from the island of Crete, but flew too close to the sun. His wings melted and he fell into the sea and drowned. Today, scientists designing nuclear warheads to be disguised as high explosive ones, have named their concept, "Waxwing."[33] The United States is to be able to rise above its opponents by secretly matching nuclear shells against their conventional shells. If we escalate too close to the thermonuclear inferno, however, the advantage will melt, and we will all die.

Escalation to nuclear warfare is most likely with the US facing an enemy with sophisticated conventional weapons, such as in the Middle East. Micromunitions might be used first in small numbers, perhaps unannounced. As the public became accustomed to their use, larger-yield nuclear warheads might then be used more frequently and more openly. An antiballistic missile defense might be deployed over the continental US to reestablish a "firebreak" between limited and global nuclear warfare. Only a massive attack by the Soviet Union could be expected to reliably penetrate the Northamerican defenses.

The DOE Bureaucracy

US nuclear policy, while being narrowly rational, produces an absurd result, the construction of a nuclear stockpile so large that no one would survive its full use, and the construction of weapons designed to guarantee that it might be used. This is Western military philosophy, which has emphasized the importance of the quantity of weapons, carried to its logical absurdity. Clearly, it shows that no one is taking responsibility for reviewing the outcome of the logical process.

The high profitability of military production undoubtedly plays a large part in creating this situation. It does not explain, however, the absence of "whistle blowers." The silence is reminiscent of that surrounding Hitler's extermination camps, when millions of people were surprised by the disclosure of the camps, even though they had been told about them years before.[34]

The loyalty of the bureaucrats carrying out this deception is maintained, because:

1) The security clearance process selects for conformists.

2) There is a strong internal ideology of how the work will save humanity. For instance, publishing false information is rationalized as necessary to prevent others from knowing how easy the bombs are to make.[24]

3) The bureaucrats have power through intrigue rather than through

owning great wealth or winning an election, so their social position is precarious.

Those who do have second thoughts about the wisdom of what is happening, and try to go public, can expect to be dismissed as "crackpots." Because the most sensitive information is not written down,[35] they have to make oral statements, which are denied by the rest of their cohort. They may also fear being blacklisted or murdered.

The bureaucracy offers one, however, the opportunity of not having to seriously consider the size of the nuclear stockpile. Any one who wishes not to learn about the overall picture may do so by not asking. Superiors don't tell their subordinates more than what is necessary in their tasks. The superiors in turn, don't necessarily ask their subordinates what specifically they are doing.[36] Lateral flow of information is blocked by the "need-to-know" security provisions. In the end, the size of the stockpile is determined implicitly by implementing a number of subordinate decisions, rather than by an explicit decision. Thus no one has to take responsibility for the result.[37]

Changing the Situation

Nearly everyone has felt powerless to expose the situation. The knowledgeable bureaucrats won't, as explained above. Their Soviet counterparts have decided to remain silent for so long, in order to support the illusion of Soviet nuclear parity,[38] that they are in too awkward a position to say anything now. The nongovernmental weapons experts have been too skeptical of "conspiracy theories", and too trusting of their government sources to notice what is going on. The mass of Americans cannot respond to a threat that remains hidden in unmarked containers and whose perpetrators remain anonymous.

The great success of the deception is also its great weakness, for the government cannot coherently suppress information about which it has deceived nearly all its members. As people learn specific facts about the nuclear apparatus, such as, where bombs are hidden and who is responsible for making them, they, however, can oppose the menace.[ ] Presently only a few are trying. As the public becomes accustomed to active rejection of nuclear arms, however, the actions will become more numerous and more dramatic. Eventually, the government may find that escalation is again politically impossible, as it was with Nixon. Thus we may be spared the fate of Icarus.

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7. Union Carbide Corp., Nuclear Div., "The Oak Ridge Y-12 Plant," (Y/DS-161), Y-12 Plant, Oak Ridge TN , 22 March 1983.

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18. Sponsored by the Earth Regeneration Society. Address

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38. The Soviet Union must know the size of the US stockpile, because their intelligence gathering ability is far greater than mine, and it only took me several weeks to reach my basic conclusions. Soviet nuclear weapons capability is only about one third that of the US.